

Date: Thu, 30 Sep 93 04:30:09 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #63
To: Ham-Ant

Ham-Ant Digest Thu, 30 Sep 93 Volume 93 : Issue 63

Today's Topics:

 2/70 beam project wanted
 Antenna Interactions
 A REAL SIPMLE ANTENNA FOR A REAL SIMPLETON
 Directional 50MHz Antenna for radio phone? (2 msgs)
 Ethernet Cable for Amateur Use (3 msgs)
 How to access callbook? (4 msgs)
 Q? Help on coil rewind for mag-mount.
 Why won't my 40 meter dipole work on 15 meters?

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 28 Sep 1993 01:31:35 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!vixen.cso.uiuc.edu!sdd.hp.com!
col.hp.com!srngenprp!news.dtc.hp.com!hplextra!hpfcs!hplvec!tcline@network.ucsd.edu
Subject: 2/70 beam project wanted
To: ham-ant@ucsd.edu

> In rec.radio.amateur.antenna, Rick Aldom <ayka60@email.sps.mot.com> writes:
>
> Hi I would like some plans from someone who has built and likes their
> dual band beam.....(if it is at all possible to combine them). I would
> like an antenna that can be taken down and transported in a small vehicle
> and set up when camping. Has anyone seen an antenna like what I have
> described? Thanks again for the assistance.....BTW if you have a mono
> band beam that really trips your trigger I would love to see those plans
> also.

>
> I have seen some "arrow" antennas, and since I am an archer, this seems
> like a good place to start.....Thanks again
>
> Rick Aldom
> ayka60@email.sps.mot.com

Hi Rick,

I have never heard of a combined 2m/440 beam, but the rest sure sounds like my friend's "Arrow Antenna". Named so because the elements are made from aluminum hunting arrows. Very sweet design. Assembles in 2 minutes. No tuning required. All parts pack inside the boom, to make a light weight walking stick. It wins many direction-finding contests, etc.

The original 2m antenna design was described in the April 1992 issue of 73 magazine. It was later reviewed in the "Homing In" column, page 62 of the August 1993 issue of 73 magazine.

Al makes and sells the Arrow 2m beams, along with several other new antennas and fox hunting devices, including a similar 440 beam. If you are interested:

Arrow Antenna
Al Lowe, N0IMW
1461 Peacock Place
Loveland, CO 80537
(303) 663-5485

(or email via me)

Hope this helps!

73

Ted Cline, N0RQV
ted_cline@hpsla.lvld.hp.com
Day: (303) 679-2352

Date: Wed, 29 Sep 1993 12:42:00 GMT

From: spool.mu.edu!bloom-beacon.mit.edu!news.kei.com!ub!acsu.buffalo.edu!
ubvms.cc.buffalo.edu!oopdavid@decwrl.dec.com
Subject: Antenna Interactions
To: ham-ant@ucsd.edu

In article <28SEP199307150821@nssdca.gsfc.nasa.gov>, stocker@nssdca.gsfc.nasa.gov
(ERICH FRANZ STOCKER) writes...

>I was hoping that I might get some insight from the more experienced antenna
>builders on the net. I am building a 3 element 2m Quad and an 8 element
>73cm Quagi. I intend to mount them on the same mast which will be rotated
>by an antenna rotator. I need to keep to one feed line to the shed so I
>intend to duplex the two antennas to the single feed line. This should
>ensure that the right signal gets to the right antenna.

>

>However, I recognize that there will be some interaction between the two
>antennas since they will be mounted on the same mast:

>

>1) I haven't been able to find out what the effect of the 73cm antenna is
>going to have on a transmitting 2m Quad and vice versa. While I have a
>Yagi modeling program for my PC -- it doesn't even model this antenna
>interaction for Yagis. Any one have a feel? Will there be a large gain
>loss? Will the main or rear lobe become seriously distorted?

>

Erich, I have performed similar duoband antenna calculations, but for
HF. I will not comment on your plans to duplex a feed system. That is
likely to be a separate difficult feat. Basically, you should model
separate antennas on your antenna modeling program. Get a feel for the
optimum gain, F/B and feed point impedance. THEN you should combine
the files and recalculate each antenna with the new elements. Some
success may be had with "ANTENNA OPTIMIZER" by K6STI. Alternatively,
you may just do trial and error. I have no direct experience with
designing VHF/HF antennas. I suspect that you will find interactions
within 2 wavelengths of your antenna. The most interactions will be
in the antenna zone, with coupling also evident in the Fresnel Zone
too. Most interactions will be on the UHF system. The question is
how much degradation of either antenna are you willing to tolerate.
Generally speaking, the physical size of the antenna makes separate
antennas more appealing to me than what you propose. I would opt
for an additional feed line. In response to #2 below, I definitely
would NOT change the orientation, you should be able to gain
satisfactory results without completely reversing directivity. You
will need to remember that electrostatic forces by adjacent elements
are active in shielding your system. It makes little difference, in
my experience, what direction you are pointing. Shielding is shielding.
73, and best of luck my friend.

Dave KN2M

>2) Would I be better off mounting the two antennas so the directors on the
>two are 180 deg opposite. This way it seems that less of the one antenna
>would be in main transmission path of the other.

>

>Any input would be appreciated.

>

>

>thanks,

>

>Erich

>N3OXM

>stocker@spso.gsfc.nasa.gov

>

Date: Wed, 29 Sep 1993 16:00:55 GMT

From: mentor.cc.purdue.edu!mace.cc.purdue.edu!bap@purdue.edu

Subject: A REAL SIPMLE ANTENNA FOR A REAL SIMPLETON

To: ham-ant@ucsd.edu

I am real new to the facinating hobby of shortwave listening.

I have a Realistic DX-350 which comes with a 3 foot
telescoping antenna. I strung 18 guage wire outside from
our cottonwood tree to the house for a run of 140 feet and
aligator clipped it to my antenna on my radio.

What should I expect?

140 feet = 42.67 meters

$f = 300 / w1$

so

$f = 300 / 42.67 = 7.030 \text{ MHz}$

Should this frequency be greatly enhanced?

Would any other frequencies be enhanced?

Should I ground this some how and if so how?

Am I wasting my time?

Date: 29 Sep 1993 17:05:07 GMT

From: yeshua.marcam.com!zip.eecs.umich.edu!destroyer!nntp.cs.ubc.ca!unixg.ubc.ca!
oseiler@uunet.uu.net

Subject: Directional 50MHz Antenna for radio phone?

To: ham-ant@ucsd.edu

I need to get some information on changing the normal antenna (omni-

directional) on a radio phone to a directional antenna, and how feasible it might be. Unfortunately, I'm pretty unfamiliar with radio electronics (although my friend who'd be doing the actual work isn't).

What sources are there for directional antennas, around 50MHz FM signal, as well as price information if possible. Since I'm not really sure about the information needed, what other information is likely to be important?

E-mail me if possible... Thanks.

-Oliver

--

Oliver Seiler	+ Erisian Development Group +	Amiga Developer +
oseiler@unixg.ubc.ca	+-----Reality by the Slice-----+	
oseiler@nyx.cs.du.edu	(604) 683-5364	
ollie@BIX.com	POB 3547, MPO, Vancouver, BC, CANADA	V6B 3Y6

Date: 30 Sep 93 06:03:30 GMT

From: ogicse!uwm.edu!vixen.cso.uiuc.edu!moe.ksu.ksu.edu!crcnis1.unl.edu!

unlinfo.unl.edu!mcduffie@network.ucsd.edu

Subject: Directional 50MHz Antenna for radio phone?

To: ham-ant@ucsd.edu

Okay, I'll bite... what is a radio phone?

Must be a Canadian thing. The term isn't common in the States.

Gary

Date: Wed, 29 Sep 1993 17:28:17 GMT

From: usc!howland.reston.ans.net!usenet.ins.cwru.edu!magnus.acs.ohio-state.edu!

cis.ohio-state.edu!pacific.mps.ohio-state.edu!linac!uchinews!att-out!cbfsb!cbnews!

cbnewst!cbnewsm!gdo%aloft.att.com%

Subject: Ethernet Cable for Amateur Use

To: ham-ant@ucsd.edu

I have obtained a good amount of Teflon thick Ethernet coax cable. I would like to use it for my amateur antennas. It's shielded beyond belief with a braid-foil-braid-foil setup. Does anybody know how it's electrical characteristics relate to other popular coax types such as Belden 9913? I'm well aware that it is 50 ohm and expensive. :-)

--

Glenn D. O'Donnell, N3BDA
AT&T Bell Laboratories
Allentown, PA

Internet: gdo@aloft.att.com
Packet: n3bda@n3dpu.#epa.pa.usa.na
Home QTH: Palmerton, PA

Date: 29 Sep 93 23:11:23 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: Ethernet Cable for Amateur Use
To: ham-ant@ucsd.edu

Glenn D. O'Donnell (gdo@aloft.att.com) wrote:
: I have obtained a good amount of Teflon thick Ethernet coax cable.
: I would like to use it for my amateur antennas. It's shielded beyond
: belief with a braid-foil-braid-foil setup. Does anybody know how it's
: electrical characteristics relate to other popular coax types such as
: Belden 9913? I'm well aware that it is 50 ohm and expensive. :-)

It's time to once again post, from "Reference Data for Engineers,"

"The normal or matched-line attenuation in decibels/100 feet is

$$A_{100} = 4.34 * R_t / Z_0 + 2.78 * f * F_p * e^{.5}$$

where the total line resistance/100 feet (for perfect surface conditions of the conductors) is, for copper coaxial line

$$R_t = 0.1 * (1/d + 1/D) * f^{.5}$$

and for copper 2-wire open line

$$R_t = (0.2/d) * f^{.5}$$

where D is diameter of inner surface of outer coaxial conductor in inches,
d is diameter of conductors (coaxial-line center conductor) in inches,
f is frequency in MHz, e is dielectric constant relative to air, and
Fp is the power factor of the dielectric at frequency f."

(There. Now you can throw away all those loss tables. ;-)

So there are two terms in the A100 equation: one for copper loss, and one for dielectric loss. At HF, and generally up to UHF, the dielectric loss is far less than the copper loss, for decent dielectrics like polyethelene at room temp, and teflon. What it boils down to is that the bigger the center conductor of the coax, the lower the loss. 9913 gets a bigger center conductor by lowering

the effective dielectric constant. The LAN cable similarly uses foam Teflon, which has a low dielectric constant. But if yours is like the stuff I got, it's not _quite_ as big as 9913. Nonetheless, it's low loss, and being teflon insulated, should never experience dielectric contamination (at least not for a long time).

(Notice that bigger Z_0 gives lower loss; even tho the center conductor of 75 ohm cable is smaller than of 50 ohm for a given outside diameter, the loss is a bit lower, other things about the construction being equal.)

Date: 30 Sep 93 00:09:00 GMT
From: ogicse!hp-cv!sdd.hp.com!hpsc.it.sc.hp.com!icon.rose.hp.com!
hpchase.rose.hp.com!cmoore@network.ucsd.edu
Subject: Ethernet Cable for Amateur Use
To: ham-ant@ucsd.edu

Tom Bruhns (tomb@lslid.hp.com) wrote:
: Glenn D. O'Donnell (gdo@aloft.att.com) wrote:
: : I have obtained a good amount of Teflon thick Ethernet coax cable.
: : I would like to use it for my amateur antennas. It's shielded beyond
: : belief with a braid-foil-braid-foil setup. Does anybody know how it's
: : electrical characteristics relate to other popular coax types such as
: : Belden 9913? I'm well aware that it is 50 ohm and expensive. :-)

: It's time to once again post, from "Reference Data for Engineers,"

(Lot's of cryptic technical stuff deleted. :-)

Here's what my Belden catalog says. I'm not sure this is the same cable you have, but it sounds like it might be:

Belden 9880

Product Description:

Solid bare copper center conductor; cellular PE insulation; foil shield,
93% tinned copper braid, Duofoil shield, 95% tinned copper braid;

Yellow PVC jacket, ring-band stripes marked every 2.5 meters.

Outside diameter .405 inches.

Impedance 50 Ohms

Velocity Factor 78%

Capacitance 26 pf/ft

Attenuation 1.20db/100ft at 50 MHz

.52db/100ft at 10 MHz

Hope this helps.

(Tom's data looked useful too, but I'm the type that is better at looking things up rather than figuring them out)

Chris Moore
N6IYS
cmoore@mothra.rose.hp.com

Date: 29 Sep 1993 15:03:57 GMT
From: concert!quad.wfunet.wfu.edu!ac!matthews@decwrl.dec.com
Subject: How to access callbook?
To: ham-ant@ucsd.edu

Rick Matthews (matthews@ac.wfu.edu) wrote:
: Can anyone tell me how to login to callsign.cs.buffalo.edu, which
: has an online callbook? I know how to get in via gopher, but
: our gopher client is often down.

Thanks to KD4EGV and K2PH for filling me in. For others that may be interested,

telnet callsign.cs.buffalo.edu 2000

connects you to the system without requiring a login id and password.

--

Rick Matthews	matthews@wfunet.wfu.edu
Wake Forest University	919-759-5340 (Voice)
Winston-Salem, NC 27109-7507	919-759-6142 (FAX)

Date: Wed, 29 Sep 93 15:34:44 GMT
From: walter!porthos!grover!kss@uunet.uu.net
Subject: How to access callbook?
To: ham-ant@ucsd.edu

In article <28c2ej\$25f@quad.wfunet.wfu.edu> matthews@ac.wfu.edu (Rick Matthews) writes:

>Can anyone tell me how to login to callsign.cs.buffalo.edu, which
>has an online callbook? I know how to get in via gopher, but
>our gopher client is often down.
>
try

telnet callsign.cs.buffalo.edu 2000

This should do it!

73,

Bruce, WB4YUC, e1 YUCCO. . .

Date: Wed, 29 Sep 1993 04:25:27 GMT
From: cs.yale.edu!wsub.ctstateu.edu!ritterbus001@yale.arpa
Subject: Q? Help on coil rewind for mag-mount.
To: ham-ant@ucsd.edu

Subject: Help! on ant loading coil.

Hi. I tried to convert the old CB mag-mount whip to a 5/8ths wave, but the SWR is terrible. The REF power is reading about 80% of the FWD power. I trimmed the whip in several steps from 51 to 47 inches, but the reading only dropped slightly, so I think that the problem must be in the coil. What I did for the coil was to calculate the individual inductances on each side of the tap from the project in the ARRL Antenna Book, and then solve for turns on my smaller coil.

Here are my calculations, using the formula;
$$L \text{ (uH)} = d^2 * n^2 / (18 * d + 40 * l)$$

	Dia	Length Base->Tap	Turns Base->Tap	uH Base->Tap	Length Tap->Top	Turns Tap->Top	uH Tap->Top
=====	=====	=====	=====	=====	=====	=====	=====
New	0.6250	0.5000	4.5000	0.2531	1.6250	5.5000	0.1550
ARRL	0.7500	2.1667	6.5000	0.2373	1.3333	4.0000	0.1347

I realize, of course, that the results are not perfect, but my coil form only allows for easy taps at half-turn points. However, it seems that the results should be "close enough for government work", to provide results far better than what I achieved.

Help! Suggestions? Ideas? I mean other than buying an antenna. Most of the fun of doing this stuff is in learning ideas and techniques.

73

Jim Ritterbusch

(N1??? - Callsign Under Construction)

Date: 29 Sep 1993 22:17:07 -0700
From: concert!gatech!howland.reston.ans.net!agate!library.ucla.edu!csulb.edu!
paris.ics.uci.edu!not-for-mail@decwrl.dec.com
Subject: Why won't my 40 meter dipole work on 15 meters?
To: ham-ant@ucsd.edu

There are a couple of possibilities here. I have had similar problems and have solved them by trial and error. My thoughts:

1. The coax is some funny multiple of a wavelength there on 15 and is wreaking havoc by becoming a part of the antenna in some awful way (change the coax length....)
2. There is some other looping occurring giving some weird feedback or something. Change the length of your ground wire, and/or add some other ground path (or counterpoise).
3. You say the SWR is flat down at 7.0 and goes up from there, well, I would shorten it a bit to bring the resonant point up a little (that is the theory, anyway....) to where you want it to triple into the 15 meter band. It may help in some measure (I know you seem to have ruled this out because the swr seems so high across the whole 15 meter band....but when you are in a corner....try anything!)

Good luck. Let us know what happens.

Clark
WA3JPG

End of Ham-Ant Digest V93 #63
